muscle bioelectricity after vestibular stimulus	+0.1	-0.4	>0.05
latent period of the reaction to vestibular stimulus	-1.09	-0.3	>0.05
duration of the aftereffect reaction to vestibular stimulus	+5.82	+4.47	>0.05

The lower values for the median of difference between the effects of combined stresses and chronic irradiation indicate that the curves for combined stresses and prolonged irradiation are quite close to one another, as compared to acute radiation.

Generally, it could be concluded that double exposure to vibration coupled with chronic irradiation produced significant increases in the spontaneous bioelectrical activity of extensor muscles in a state of rest. The activity of these muscles during and after adequate vestibular stimulation decreased,

however. The latent period of the myoelectric response to adequate vestibular stimulus increased after exposure to combined stresses. The duration of the aftereffect of this reaction due to the combined effects of vibration and prolonged irradiation underwent wavelike fluctuations near the zero level, with a moderate increase in activity one week after exposure.

Examinations of the peripheral blood, body weight, clinical condition, and general viability of the animals did not show a statistically reliable difference between the combined effects of vibration and prolonged radiation and prolonged radiation alone.

It was found that vibration alters the influence of prolonged irradiation on electromyographic characteristics of the vestibulotonic reflex rather significantly. Most often, vibration effects predominated during the early stages of exposure to combined stresses and radiation effects followed. Some animals showed a predominant vibration effect while others showed a radiation effect. In some cases, the effects of vibration and radiation cancelled each other, so that the net effect did not differ from control values.

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000101820013-5"

L 07175-67

ACC NR: AT6025385

The most outstanding feature of vibration noted was its lesser influence on the effects of chronic irradiation than on the effects of acute irradiation.

Orig. art. has: 7 figures and 1 table. [W.A. No. 22; ATD Report 66-99]

SUB CODE: 06 / SUBM DATE: 01Feb66

Card 5/5 gl

ACC NR: AT6036639 SOURCE CODE: UR/0000/66/000/000/0257/0258

AUTHOR: Livshits, N. N.; Apanasenko, Z. I.; Kuznetsova, M. A.; Luk'yanova, L. D.; Meyzerov, Y. S.

ORG: none

TITLE: Combined effect of vibration and ionizing radiation on the metabolism and function of the central nervous system /Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24-27 May 1966/

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 257-258

TOPIC TAGS: space physiology, combined stress, biologic vibration effect, ionizing radiation biologic effect, muscle physiology, electrophysiology, central nervous system, rat, rodent

ABSTRACT:

Rats and guinea pigs were exposed to the complex effects of vibration (70 cps, 0.4 mm, 15 min) before, or both before and after, exposure to a single lethal dose (500--600 r) of ionizing radiation. The effect of this particular combination of stress factors was tested on oxidative processes in the brain tissues, on the characteristics of the vestibular reflex, and on the bioelectrical activity of skeletal muscles in a state of relative rest.

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Results showed a complete dominance of the effects of vibration.

Completely analogous results for vestibular reflexes were obtained when vibration was combined with prolonged gamma irradiation (500 r over a 14-hr period). Vibrational effects were also dominant with respect to conditioned feeding reflexes when vibration was followed by irradiation with a dose of 50 r.

This masking of the radiation effect was observed in those cases in which the effects of the two factors tended to counteract each other. But the masking effect was also observed when influences of the two factors were analogous and could be distinguished from each other only by their magnitude or dynamics. In this last case no summation of similar effects was observed, which can be attributed to the protective effect of vibration. The protective effect was confirmed by the fact that vibration tended to weaken leukopenia produced by radiation.

At the same time results were not completely uniform. The combined effect of vibration and either acute or fractionated irradiation on the basic characteristics of the unconditioned defense reflex showed that vibrational effects were dominant in some cases and radiation effects were domi-

nant in others. Radiation effects tended to dominate as the time after exposure increased. Investigation of the oxidative processes in the brain tissues showed no summation of analogous effects even at the later stages of the investigation. However, when observations were made of functional changes of various parts of the central nervous system, a complex combined effect of both factors was found, which does not fit the pattern of the protective effects of vibration.

The variety of changes in radiation effects due to the influence of vibration can be explained by the multiplicity of mechanisms of combined effects of radiation and vibration. The more significant factors which can affect the influence of radiation are: the oxygen effect, changes in the functional condition of the central nervous system due to effects of vibration, interaction between centers of the nervous system, the course of reparative and compensatory processes, and others. [W. A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

ACC NR: AT6036479 SOURCE CODE: UR/0000/66/000/000/0033/0034

AUTHOR: Apanasenko, Z. I.

ORG: none

TITLE: Effect of dynamic factors on the functional state of the otolithic part of the vestibular analyzer [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24 to 27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 33-34

TOPIC TAGS: space physiology, combined stress, biologic acceleration effect, biologic vibration effect, vestibular analyzer, otolith, muscle physiology, space biologic experiment, rodent, hematology, electronystagmography

ABSTRACT: The electronystagmographic characteristics of the labyrinth tonic reflex to hind limb muscles of guinea pigs were studied during vibration and centrifugation. The data obtained from this experiment were compared with material from the flight of the fourth orbital spaceship, launched on 9 March 1961.

Double exposure to vertical vibration (70 cps, 0.4 mm) caused shifts in myoelectric indices, indicating the predominance of an excitatory process in the vestibular analyzer-anti-G muscle complex. These shifts are distinguished by their stability and duration, which in turn could affect the

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development of a residual excitation focus in the vestibular (and probably motor) analyzer system. No substantial changes in the general clinical condition of the animals were noted.

Acceleration during double exposure to centrifugation (8 G for 15 min) also altered the functional condition of the vestibular analyzer and the level of spontaneous muscle bioelectricity, which was apparently responsible for the prevalance of an excitatory process. The effects of centrifugation were occasionally more pronounced, but were significantly less stable and of shorter duration than the effects of vibration. Based on a number of parameters, the latter could be verified quantitatively. No substantial changes in the clinical condition of the animals were noted other than slight leukocytosis in the peripheral blood.

After the flight of guinea pigs on the 4th orbital spaceship, a dramatic increase in spontaneous myoelectricity and shifts in myoelectrical characteristics of the labyrinth reflex to hind limb muscles were noted. The observed deviations permit the speculation that there is a stable excitation focus centered in the vestibular (and its otolith component) and motor analyzer under spaceflight conditions.

L 08282-67
ACC NR: AT6036479

A comparison of the effects of vibration, centrifugation, and spaceflight indicates that the effects of spaceflight on muscle bioelectricity and the labyrinth reflex substantially surpass those of vibration and centrifugation. However, the effects of both these factors are occasionally sharply manifested in spaceflight effects. It would appear that there is a summation of high magnitude, low duration effects of centrifugation and the lesser but very prolonged effects of vibration. The effects of spaceflight are more similar to those of vibration than to those of centrifugation, which might indicate the singular importance of the role of vibration in shifts in otolithic function during spaceflight. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 1/1

L 44[illegible]-66 EWT(k)-2/EWT(l)/FCC/FSS-2 SCTB TT/BD/RD/GW

ACC NR: AP6031663 SOURCE CODE: UR/0216/66/000/005/0625/0643

AUTHOR: Frank, G. M.; Livshits, N. N.; Arsen'yeva, M. A.; Apanasenko, Z. I.; Belyayeva, L. A.; Golovkina, A. V.; Klimovitskiy, V. Ya.; Kuznetsova, M. A.; Luk'yanova, L. D.; Meyzerov, Ye. S. 70 69 B

ORG: Institute of Biological Physics, AN SSSR (Institut biologicheskoy fiziki AN SSSR)

TITLE: The combined effect of spaceflight factors on some functions of the organism

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 5, 1966, 625-643

TOPIC TAGS: central nervous system, biologic oxidation, biologic metabolism, reflex activity, brain tissue, radiation effects, ~~ionizing~~ radiation biologic effect, ionizing radiation

ABSTRACT: Results of experiments studying the combined effect of spaceflight factors (acceleration, vibration, and radiation) on some functions of the organism (brain hemodynamcis, CNS functions, and cell division of hematopoietic organs) are discussed. Tolerance of the CNS to accelerations depends significantly on changes of brain hemodynamics during accelerations. Brain blood flow in rabbits subjected to centrifugal accelerations in the head-foot direction (5 G in head region and 10 G in pelvis region) for 12 to 60 sec decreased. This reaction was insignificant during the first exposure, sharply increased during repeated exposure, and weakened after chronic exposure, thus indicating that tolerance to accelerations can be

Card 1/3 UDC: 611.8:629.195.2

ACC NR: AP6031663

increased by training. Participation of CNS reflex mechanisms in these processes is probable. The 15-min exposure of guinea pigs to radial accelerations (8 G), centrifuged twice with a one-day interval, increased the spontaneous bioelectrical activity of extensor muscles; however, the effect was not lasting. It was lowered the day after the second centrifugation and was essentially the same as the control from the sixth day. The 15-min exposure of the animals to vibrations (70 cps, 0.4 mm amplitude), twice with a one-day interval, produced less distinct but more stable changes, with normalization more than 25 days after the first vibration exposure. Changes in myoelectric activity during spaceflight (Sputnik-4) incorporated features of both acceleration and vibration effects, appreciably exceeding them in intensity. Oxidation processes in brain tissues, judged by PO_2 and "oxygen test" results, were initially increased in intensity by the effect of vibrations (using the above parameters), and subsequently underwent phase changes, including depression of oxidation metabolism during the aftereffect period. Changes in unconditioned defense and vestibulotonic reflexes and upper nervous activity were observed later than 12 days after vibration. Inhibition of food-procuring conditioned and defensive unconditioned reflexes in the majority of animals, with pronounced parabiotic phenomena, was also found. Exposure to 8-, 10-, and 20-G accelerations and vibration (700 cps, 0.005 mm, 60 min) resulted in decreased mitotic activity of bone-marrow cells for 30 days. Disturbances of cell division involved chromosomal stickiness and increase in the number of chromosomal aberrations. Ionizing radiations and the above dynamic factors produced a similar effect on oxidation metabolism in brain tissues and cellular division in hematopoietic organs. They differed

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L 47223-66

ACC NR: AP6031663

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only in the level and dynamics of changes caused. The combined effect of irradiation and dynamic factors either did not exceed or was less than the effect of each of the indicated factors separately, a phenomenon seen as a radioprotective action of dynamic factors. The relations observed are similar to phenomena of dominance and parabiosis. Typical radiation reactions were intensified when irradiation was combined with factors having directly opposed effects. The variation and complexity of results of the combination of dynamic factors and irradiation are explained by the multiplicity of the mechanisms of the combined effect of radiation and nonradiation factors. The combined exposure to vibration and whole-body acute irradiation at a lethal dose showe that in a majority of cases the vibration effect on metabolism and CNS function wa dominant at early stages, while that of irradiation prevailed at later stages. At the latest stages of exposure, the combined effect of vibration and irradiation was diverse and complicated. According to some indices, the trend of changes corresponded to the effect of one of the factors while the dynamics of the processes reflected the effect of the other one. Under the uniform action of both factors, the phenomena of partial summation of weakening of the radiation effect, and in several cases of a sharp increase of radiation effect by the opposite action of the vibration effect, were observed. Probable mechanisms of the phenomena described are considered. Orig. art. has: 13 figures. [SW]

SUB CC: 06/ SUBM DATE: 14Dec65/ ORIG REF: 032/ OTH REF: 008/ ATD PRESS: 5095

Card 3/3

BRANDSEVICH, F. A.

16(1); 24(4,5)

PHASE I BOOK EXPLOITATION

SOV/1899

Akademiya nauk Belorusskoy SSR. Institut fiziki i matematiki

Trudy, vyp. 2. (Transactions of the Institute of Physics and Mathematics, Belorussian SSSR Academy of Sciences, Nr 2) Minsk, 1957. 283 p. Errata slip inserted. 750 copies printed.

Ed.: B. I. Stepanov, Academician, BSSR Academy of Sciences; Ed. of Publishing House: L. Marike; Tech. Ed.: I. Volokhanovich.

PURPOSE: This book is intended for mathematicians, physicists, and graduate students in mathematics and physics.

COVERAGE: This book contains a series of articles on recent contributions by members of the Institut fiziki i matematiki (Institute of Physics and Mathematics) of the Academy of Sciences, BSSR, in the fields of radiation, luminescence, optics, and spectroscopy and on the applications to physics of analysis, tensor analysis, linear groups, theory of adjustments, and differential equations. The

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Borisevich, N. A., Ya.S. Khvashchevskaya, and I.F. Laptsevich. Dispersion Filters for the Infrared Region of the Spectrum 214

Bokut', B. V. Surface Energy of a System in the Neighborhood of an Ideal Wall 224

Fedorov, F. I. On Certain Diadic Representations for Three-dimensional Tensors 230

Yerugin, N. P. Analytic Theory of Nonlinear Systems of Ordinary Differential Equations 235

Krylov, V. I. On the Proof of the Impossibility of Constructing a Quadrature Formula With Equal Coefficients and Number of Nodes Greater Than Nine 249

Suprunenko, D. A. Two Theorems on Reducible Nilpotent Linear Groups 255

Popov, V. V. (Deceased) Determination of the Weight of a Function of Adjusted Values Using Polygonal Adjustment Method 260

APANASEVICH, P.A.

Transformation of light by atoms. Trudy Inst.fiz. i mat. AN BSSR no.2:55-84 '57. (MIRA 12:1)
(Light--Scattering) (Luminescence)

APANASEVICH, P.A.

20-3-18/59

AUTHORS: Stepanov, B.I., Member of the AN Belorussian SSR, Apanasevich, P.A.

TITLE: The Natural Contour of Energy Levels (Yestestvennyy kontur urovney energii)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 115, Nr 3, pp. 488-490 (USSR)

ABSTRACT: The present paper obtains an expression which can be considered the natural contour of the energy levels. An isolated system is examined here which consists of two interacting subsystems: namely of an atom and of the electromagnetic field. The Schroedinger equation for the stationary states of such a system has the form $(H_a + H_f + U)\Psi = E\Psi$. In this connection H_a and H_f respectively signify the Hamilton functions of the free atom and the free electromagnetic field respectively. The interaction operator has the form $U = -(e/mc)\vec{p}\vec{A}$. In this connection $\vec{p}$ is the operator of the impulse of the optical electron of this atom and A is the vector potential of the electromagnetic field:

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the excited level of the atom with the practically continuous spectrum of the possible states of the field. The interaction of the two subsystems has a resonance character. The expression found for the contour of the spectral line by means of the quantum electrodynamics is written down. There are 7 references, 3 of which are Slavic.

ASSOCIATION: Institute for Physics and Mathematics AN Belorussian SSR (Institut fiziki i matematiki Akademii nauk BSSR)

SUBMITTED: March 4, 1957

AVAILABLE: Library of Congress

irradiation stopped the steady luminescence disappears immediately and the afterglow occurs. Formulae are given for the duration as well as for the spectrum of this afterglow. The results calculated for a classical dipole remain also in quantum-electro-dynamics. Furthermore with quantum-electrodynamics also the other possibilities of light transforms can easily be investigated. The authors investigate here, for example, an atom which has three energy levels and which is in interaction with the medium surrounding it. The light transformed by such an atom consists of three bands. By means of a sketch the most probable processes are shown and then discussed. The theoretical analysis of the transformation of light by atoms and simple molecules shows the following: A classification of this phenomenon according to the extinction is impossible if, as usual, extinction means the decrease of yield. The classification according to the duration of extinction is not clear and sometimes can lead to wrong results. A possible classification is shortly discussed here, i.e. the importance of the various bands is shown. Only the Rayleigh (Reley) scattering can be described by means of a classical dipole. Atoms and simple molecules can change their state

in the interaction with their surrounding medium, and this without losing their capability of emitting light. Such intermediary processes lead to the extinction of scattering as well as to a corresponding increase of the intensity of some bands of photoluminescence. There are 1 figure, and 5 references, 5 of which are Slavic.

SUBMITTED: June 1, 1957.

AVAILABLE: Library of Congress

Card 3/3

APANASEVICH, P.A. Cand Phys-Math Sci ... (diss) "Properties of the secondary luminosity ~~depending on~~ in solutions the spectral composition of the radiant light." Minsk, 1958. 10 pp (Min of Higher Educ USSR. Belorussian State Univ im V.I. Lenin. Phys-Math Faculty). 150 copies (KL, 37-58, 110).

AUTHOR: Apanasevich, P.A. SOV/51-5-2-1/20

TITLE: Transformation of Light by Atoms and Molecules (Preobrazovaniye sveta atomami i molekulami)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 2, pp 97-109 (USSR)

ABSTRACT: Properties of the secondary emission of light are not yet fully known and it is possible to meet contradictory statements about them. Thus Vavilov (Ref 1) thought that on approach of the incident-light frequency to the natural frequency of a substance there is no gradual transition from scattering to resonance emission, but that these two effects are present at the same time. Pringsheim (Ref 2), on the other hand, wrote that under these conditions scattering changes gradually into resonance emission. The present paper is a systematic quantum-electrodynamic treatment of the secondary emission. Dependence of the secondary emission properties on the spectral composition of the primary radiation and the properties of the medium is discussed. The author first deals with transformation of light

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Transformation of Light by Atoms and Molecules SOV/51-6-2-1/26

by atoms in their ground state. He discusses both the steady-state illumination conditions and the afterglow which is observed when the illumination ceases. Then the author proceeds to the case of transformation of light by excited atoms and molecules; again both the steady-state and the afterglow cases are considered. The paper is entirely theoretical and its results will be applied later to classified secondary emission. There are 1 figure and 15 references, 7 of which are Soviet, 4 German and 4 translations of Western work into Russian.

ASSOCIATION: Institut fiziki i matematiki, AN BSSR (Institute of Physics and Mathematics, Academy of the Sciences of the Belorussian S.S.R.)

SUBMITTED: October 23, 1957

Card 2/2 1. Secondary emission--Theory 2. Secondary emitters
3. Secondary emitters--Properties

24(7) SOV/48-22-11-25/55

AUTHORS: Stepanov, B. I., Apanasevich, P. A.

TITLE: On the Concepts of Photoluminescence and Dispersion (O ponyatiyakh fotolyuminestsentsii i rasseyaniya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol 22, Nr 11, pp 1380-1386 (USSR)

ABSTRACT: The distinction between luminescence and dispersion is at present drawn by applying the criterion of duration as advanced by S. I. Vavilov. The application of this criterion provided a means of explaining the nature of the Vavilov-Cherenkov effect and of the so-called blue glow. In some cases the application of this criterion meets with considerable difficulties. This is true in particular for the classification of resonance emission, which is found in atoms and in simple molecules. This phenomenon is in some quarters termed resonance fluorescence, in others resonance dispersion. For this reason this paper presents a detailed theoretical investigation of the light transformation process. The properties of secondary luminescence observed in the course of experiments must be closely connected with the nature of the light transformation process. The difference between dis-

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persion and photoluminescence must reflect the differences in the interaction mechanism between the substance and the exciting light. If it is assumed that the classic theory of forced emission of the dipole gives a correct picture of the fundamental properties of dispersion and of resonance emission of light, then there is no way of applying the criterion of duration (extinction) for a classification of secondary luminescence. As it is known the forced emission is firstly extinguished and secondly it is accompanied by a persistent afterglow. Quantum-electrodynamics considerations lead to the same result. Apart from the Rayleigh (releyevskoye) diffusion and resonance luminescence, it also provides a means for investigating other varieties of secondary luminescence and hence for solving the problem of classification. From the viewpoint of quantum-electrodynamics the secondary luminescence can be divided into two parts , which are due to a different mechanism and which exhibit different properties. One part is constituted by the luminescence which is generated under a participation of the intermediate transitions. The other part is represented by luminescence generated without intermediate transitions. A quantum-electrodynamical solution of the problem of light transformation permits to offer

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000101820013-5"

a theoretical substantiation of the criterion of extinction and to draw the bounds of its applicability. There are 4 figures and 1 reference, 1 of which is Soviet.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk BSSR (Institute of Physics and Mathematics, AS Belorussian SSR)

APANASEVICH, P.A.

Quantum electrodynamic basis for a probability method of studying properties of absorption and radiation. Vestsi AN BSSR.Ser.fiz.-tekh.nav. no.2:31-43 '59. (MIRA 12:11)
(Quantum electrodynamics) (Light)

D

S/058/60/000/006/037/040
A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 6, p. 354, # 15308

AUTHOR: Apanasevich, P.A.

TITLE: The Dependence of the Properties of the Secondary Luminescence on the Spectral Composition of the Irradiating Light

PERIODICAL: Tr. In-ta fiz. i matem. AN BSSR, 1959, No. 3, pp. 72-84

TEXT: The author proposes and substantiates a theoretical principle of classifying the secondary radiation in accordance with its origination mechanism, in contrast to the S.I. Vavilov criterion of afterglow duration for classifying non-equilibrium radiation. According to this principle, the secondary radiation may be divided into two kinds. To the first kind, the radiation belongs which arises without the participation of intermediate transitions; to the second kind, the radiation arising with the participation of one, two, or more redistributions. The distinction in the secondary radiation properties arises in consequence of the distinction in the originating mechanism. In the first case, a close connection exists between the spectral properties of the primary and secondary radiations.

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S/058/60/000/006/037/040
A005/A001

The Dependence of the Properties of the Secondary Luminescence on the Spectral Composition of the Irradiating Light

To this radiation kind belong the Rayleigh diffusion and the mixed diffusion, the resonance emission, and certain cases of fluorescence. The steady-state spectrum of these radiations does not coincide with the after-glow spectrum. To the second radiation kind belong the cases of photoluminescence, in which the absorption of the primary photons is separated from the emission of the secondary photons by intermediate processes. As a result, the connection between the spectral properties of the primary and secondary radiations vanishes.

K.S. Vul'fson

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

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S/058/60/000/007/013/014
A005/A001

Translation from: Referativnyy zhurnal, Fizika, 1960, No. 7, p. 378, # 18318

AUTHORS: Gribkovskiy, V. P., Apanasevich, P. A., Stepanov, B. I.

TITLE: The Optical Properties of the Harmonic Oscillator

PERIODICAL: Tr. In-ta fiz. i matem. AN BSSR, 1959, No. 3, pp. 131-141

TEXT: The authors study by the quantum-mechanical method the absorption and emission of light by a linear harmonic oscillator. It is shown that all conclusions of the classic theory which deal with the integral absorption and emission of a harmonic oscillator, agree with the conclusions drawn according to the quantum theory. It is noted that the absorption and emission of the os oscillator differ from the absorption and emission of a system having two levels. This difference becomes more essential when non-optical transitions exist. In spite of this difference, the energy yield of the system with two levels coincides with the yield of the oscillator.

ASSOCIATION: In-t fiz. i matem. AN BSSR (Institute of Physics and Mathematics of AS BSSR)

K. S. Vul'fson

Translator's note: This is the full translation of the original Russian abstract.

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APANASEVICH, P.A.

Transformation of light by molecules. Trudy Inst.fiz.i mat. AN BSSR no.3:187-212 '59. (MIRA 13:4)
(Molecules) (Light)

SOV/51-7-4-1/32

AUTHORS: Stepanov, B.I. and Apanasevich, P.A.

TITLE: Classification of Secondary Emission

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 4, pp 437-445 (USSR)

ABSTRACT: Propagation of light is accompanied by emission of the medium it traverses. Depending on its properties, this secondary emission is usually divided into photoluminescence (fluorescence and phosphorescence) and forced emission (Raylight and Raman scattering, reflection and so on). This division was suggested by Vavilov (Ref 1) who used duration of emission or the closely related effect of quenching as the criteria of classification of non-equilibrium emission (the non-equilibrium emission is the emission of a body in excess of its thermal radiation). Luminescence was defined by Vavilov as the non-equilibrium emission with afterglow of long duration, subject to quenching. Forced emission was taken to include all emission which disappears practically immediately after the action of an external agent (light). It was assumed that forced emission is not quenched. Vavilov's criteria are not entirely satisfactory; they fail when applied to resonance radiation. The present authors used quantum-electrodynamic approach

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to deduce a consistent classification of secondary emission. The division between photoluminescence and scattering was based on the presence or absence of intermediate processes between the acts of generation and annihilation of photons. The limits of applicability of Vavilov's criteria are also discussed. The paper is entirely theoretical. There are 27 references, 16 of which are Soviet, 2 English, 5 German, 2 French and 2 translations.

SUBMITTED: January 24, 1959

Card 2/2

S/048/60/024/05/03/009
B006/B017

AUTHOR: Apanasevich, P. A.

TITLE: On a Probability Method for Calculating Absorption and Emission Properties

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 5, pp. 509-513

TEXT: The present article is a reproduction of a lecture delivered at the Eighth Conference on Luminescence (Minsk, October 19-24, 1959). The theoretical considerations of this paper are based on an equation by Einstein. It describes the change in the occupation of atomic or molecular energy levels in time as a sum of terms containing the transition probabilities from the level i into the lower j (photon emission) and vice versa (absorption), and of non-optical transitions due to interactions between individual degrees of freedom. This equation (after which this method is called) is first deduced quantum electrodynamically, and its range of application is studied. It is shown that the probability method is equivalent to the first perturbation-theoretical approximation. In

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VB

this connection, a system is considered which consists of molecules (atoms) and a medium interacting with each other and a radiation field interacting with the molecules (atoms). The probability method cannot be used for the study of coherence problems. The optical transition probabilities can be expressed only if the interaction between molecules or atoms and the surrounding medium can be expressed by the Einstein coefficient. In the case of strong interaction these probabilities are temperature-dependent. The author thanks B. I. Stepanov for suggesting the problem and for his interest in this paper. L. Landau is mentioned. There are 7 references: 5 Soviet and 2 German.

ASSOCIATION: Institut fiziki Akademii nauk BSSR (Physics Institute of the Academy of Sciences of the BSSR)

VB

APANASEVICH, P.A.; KRUGLIK, G.S.

Angular distribution of resonance luminescence of vapors. Izv. AN SSSR.Ser.fiz. 24 no.5:525-528 My '60. (MIRA 13:5)

1. Institut fiziki AN BSSR.
(Luminescence) (Vapors--Optical properties)

AFANASEVICH, P.A.; AYZENSHTADT, V.S.; YEL'YASHEVICH, M.A., akademik, red.; MARIKS, L., red. izd-va; SVIRIDOV, V., tekhn. red.

[Tables of the distribution of energy and photons in an equilibrium radiation spectrum] Tablitsy raspredeleniia energii i fotonov v spektre ravnovesnogo izlucheniia. Minsk, Izd-vo Akad. nauk BSSR, 1961. 250 p. (MIRA 15:2)

1. Akademiya nauk Belorusskoy SSR (for Yel'yashevich).
(Heat—Radiation and absorption)

AFANASEVICH, P. A.

"The Dependence of absorption, emission, and scattering of radiation on the intensity of incident radiation."

The report gives the derivation by the method of quantum electo-dynamics of the dependence of absorption and dependence of scattering and photo-luminescence characteristics on the spectral composition and intensity of incident nonmonochromatic radiation absorbed by the medium and on the probability of nonoptical transitions.

The report presented at the 11th Conference on Luminescence (Molecular luminescence and luminescence analysis) Minsk, 10-15 Sept. 1962.

KUGLIK, G. S. and AFANASEVICH, P. A.

"The problem of coherent spontaneous emission."

The report gives the conditions under which coherent spontaneous emission with an intensity proportional to the square of the number of emitted particles were discussed, and it was shown that under general conditions such emission is impossible.

The report presented at the 11th Conference on Luminescence (Molecular luminescence and luminescence analysis) Minsk, 10-15 Sept. 1962.

9.1514

39768
S/250/62/006/002/004/007
1028/1228

AUTHOR: Apanasevich, P. A.

TITLE: Dependence of the absorption on the power of the external radiation

PERIODICAL: Akademiya nauk Belaruskay SSR. Doklady, v. 6, no. 2, 1962, 94-96

TEXT: This is the first study of the saturation effect, treating the case of a radiation of arbitrary spectral composition, and investigating the influence of radiation power on the frequency dependence of the probability of transition between levels. The calculation is conducted on the basis of a quantum-electrodynamic equation for the density matrix. This equation is solved for a stationary regime by adopting the assumption that the frequencies of the external radiation are near to the fundamental frequencies ω_{21} of the atom. A result obtained is that the power of absorption of a radiation of frequency ω is equal to the product of the quantum $\hbar\omega$ by the number of atoms effective for the absorption of radiation in the band of the fundamental frequency ω_{21}; and by the spectral density of the probability of transition of the atom from the level 1 to the level 2. This probability, in turn, depends on the power and the spectral composition of the whole radiation. A simpler expression is then obtained for the case of monochromatic radiation. This latter expression is essentially different from the well-known formula describing the saturation effect. The most important English-language reference is: R. Karplus, J. Schwinger, Phys. Rev., 73, 1020, 1948.

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics of AS BSSR)

PRESENTED: by B. I. Stepanov, member of the Academy of Sciences of BSSR

SUBMITTED: December 19, 1961

Card 1/1

42914

S/250/62/006/012/003/003
A061/A101

AUTHOR: Apanasevich, P. A.

TITLE: Use of the quantum-electrodynamic density matrix for the calculation of absorption

PERIODICAL: Akademiya nauk BSSR. Doklady, v. 6, no. 12, 1962, 768 - 771

TEXT: The quantum-electrodynamic density matrix was used for calculating molecular absorption and emission properties by taking into account the interaction of the molecule both with a radiation field and with the surrounding medium. The density matrix of the system molecule + quantized radiation field is defined by $\rho_{ij}(n_\chi, m_\chi) = \sum_\alpha c_{i\alpha}(n_\chi) c^*_{j\alpha}(m_\chi)$ (1), where $c_{i\alpha}(n_\chi)$ is the probability amplitude for finding a molecule in the state i, and $(n_\chi) = n_1, n_2, \ldots, n_\chi$, indicates the field state. A method applied in a previous paper (P. A. Apanasevich, Vyestsi AN BSSR, ser. fiz.-tekhn. navuk, no. 2, 31, 1959) is used to show that, on the condition that the elements of the matrix of interaction of the molecule with radiation do not depend on the state of the medium nor on the continuity of its energy levels, the density matrix satisfies the system

Card 1/5

Use of the quantum-electrodynamic density matrix...

$$\frac{d\rho_{ll}(n_\varkappa, m_\varkappa)}{dt} = -\sum_{k,\varkappa'}(H^+_{\varkappa'})_{lk}\sqrt{n_{\varkappa'}}\, e^{i(\omega_{lk}+\omega_{\varkappa'})t}\,\rho_{kl}(n_\varkappa-\delta_{\varkappa\varkappa'}, m_\varkappa) -$$

$$-\sum_{k,\varkappa'}(H_{\varkappa'})_{lk}\sqrt{n_{\varkappa'}+1}\, e^{i(\omega_{lk}-\omega_{\varkappa'})t}\,\rho_{kl}(n_\varkappa+\delta_{\varkappa\varkappa'}, m_\varkappa) +$$

$$+\sum_{k,\varkappa'}(H_{\varkappa'})_{kl}\sqrt{m_{\varkappa'}}\, e^{i(\omega_{kl}-\omega_{\varkappa'})t}\,\rho_{lk}(n_\varkappa, m_\varkappa-\delta_{\varkappa\varkappa'}) +$$

$$+\sum_{k,\varkappa'}(H^+_{\varkappa'})_{kl}\sqrt{m_{\varkappa'}+1}\, e^{i(\omega_{kl}+\omega_{\varkappa'})t}\,\rho_{lk}(n_\varkappa, m_\varkappa+\delta_{\varkappa\varkappa'}) -$$

$$-(d_l+d_l)\,\rho_{ll}(n_\varkappa, m_\varkappa)+\sum_k d_{kl}\rho_{kk}(n_\varkappa, m_\varkappa)\,\delta_{ll}, \qquad (2)$$

rde

$$(H_{\varkappa'})_{ll} = -(H^+_{\varkappa'})^*_{ll} = \frac{1}{ih}\sqrt{\frac{2\pi h}{V\omega_\varkappa}}\left(\sum_a \frac{e_a}{m_a}\,\mathbf{p}_a\,\mathbf{e}_{\varkappa'}\,e^{i\vec{k}\vec{r}_a}\right)_{ll}; \qquad (3)$$

Card 2/5

Use of the quantum-electrodynamic density matrix...

$$d_M = 2 \frac{\sum_{\omega} \frac{\pi}{\hbar^2} |M_{l\alpha}^{kk'}|^2 \delta(\omega_{l\alpha}^{kk'}) |c_{k\beta}|^2}{\sum_{\beta} |c_{k\beta}|^2}; \quad (4)$$

$$d_l = \sum_{k} \frac{\sum_{\omega} \frac{\pi}{\hbar^2} |M_{l\alpha}^{kk}|^2 \delta(\omega_{l\alpha}^{kk}) c_{k\alpha} c_{k\alpha}^*}{\sum_{\alpha} c_{k\alpha} c_{k\alpha}^*}; \quad (5)$$

Using (2) the absorption of a monochromatic radiation with frequency ω, which is near the characteristic frequency ω_{12} of the molecule, is derived for systems with three levels E_1, E_2, and E_3, while at the same time irradiating it with resonance radiation (ω_{31}). The effect of the resonance radiation of spectral composition and spontaneous emission upon the level distribution of the molecules is described by the corresponding induced and spontaneous transition probabilities. In the present case the optical transition probabilities d_{13}, d_{31}, and d_{32} can be replaced by $p_{13} = d_{13} + B_{13}u(\omega_{31})$, $p_{31} = d_{31} + B_{31}u(\omega_{31}) + A_{31}$, $p_{32} = d_{32} +$

Card 3/5

Use of the quantum-electrodynamic density matrix...

+ A_{32}, where $B_{31} = B_{13}$; A_{31} and A_{32} are the Einstein coefficients. Thus a simple system of differential equations is obtained from (2). Under steady-state conditions this system can easily be solved, and the following system is obtained for the absorption of radiation by one molecule:

$$W_{\text{погл}} = h\omega Q(\rho_{11} - \rho_{22}) = h\omega Q \frac{\rho_1^0 - \rho_2^0}{1 + \tau Q}, \quad (9)$$

$$Q = B_{12} \frac{1}{\pi} \frac{d}{d^2 + (\omega_{21} - \omega)^2} u_\omega. \quad (10)$$

$$\tau = \frac{1}{2} \frac{p_{12} + d_{22} + 2p_{21} + 2p_{22}}{D}, \quad (11)$$

$$\rho_2^0 = \frac{d_{12} p_{21} + p_{22}(d_{12} + p_{12})}{D} \rho, \quad (12)$$

$$\rho_1^0 = \frac{p_{21} p_{22} + p_{21}(p_{21} + d_{22})}{D} \rho,$$

$$D = p_{11}(p_{21} + p_{22} + p_{12}) + d_{12}(d_{22} + p_{21} + p_{22}) + p_{12} d_{22} + p_{21} d_{22} + p_{12} p_{22}. \quad (13)$$

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Use of the quantum-electrodynamic density matrix...

Here f_1^o and f_2^o are the probabilities for finding a molecule on levels 1 and 2, and Q is the probability of a molecular transition under the action of a monochromatic wave (.) with energy density u_o. Thus the absorption of a monochromatic radiation can be described by the introduction of the parameters τ and $d = \gamma_{21} + \frac{1}{2}(d_{21} + d_{12} + d_{13} + d_{23})$ which characterize the interaction of the molecule with the medium and which depend on the non-optical, spontaneous, and induced (w_{31} and w_{32}) transition probabilities. In a similar manner, the problem of a molecule with more than three levels can be solved.

ASSOCIATION: Institut fiziki AN BSSR (Institute of Physics of AS BSSR)

PRESENTED: by B. I. Stepanov, Academician of AS BSSR

SUBMITTED: July 18, 1962

APANASEVICH, P.A.

Absorption of nonmonochromatic radiation fluxes. Dokl. AN BSSR 7 no.1:22-26 Ja '63. (MIRA 17:1)

1. Institut fiziki AN BSSR. Predstavleno akademikom AN BSSR B.I. Stepanovym.

KRUGLIK, G.S.; APANASEVICH, P.A.

Balance equations allowing for the collective properties of a system of identical particles. Dokl. AN BSSR 7 no.10: 677-680 O '63. (MIRA 16:11)

1. Institut fiziki AN BSSR. Predstavleno akademikom AN BSSR B.I. Stepanovym.

APANASEVIC, P.A. [Apanasevich, P.A.]

Theory of powerful radiation flux absorption. Chekhosl fiz zhurnal 13 no.3:201-208 '63.

1. Institut fiziki Akademii nauk BSSR.

L 9844-63 BDS

ACCESSION NR: AP3000578 S/0051/63/014/005/0612/0623

AUTHOR: Apanasevich, P. A. 46

TITLE: Absorption and conversion of heavy radiation fluxes. 1. Equations for the density matrices and their application when the material is irradiated with monochromatic radiation

SOURCE: Optika i spektroskopiya, v. 14, no. 5, 1963, 612-623

TOPIC TAGS: radiation, flux density, optical absorption, emission, conversion of radiation

ABSTRACT: Bearing in mind that absorption, emission and transformation of radiation incident on matter depends not only on the properties of the irradiated molecular or atomic system, but also on the character of the surrounding medium (heat reservoir), the author derives equations for the density matrix, describing the interaction of molecules with the radiation quantum field in the presence of an ambient medium. The influence of the medium is taken into account by introducing the probabliilities for nonradiative transitions and level shifts.

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L 9844-63
ACCESSION NR: AP3000578

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The deduced equations are then applied to calculation of the interaction of monochromatic radiation with molecular systems having two and three levels. There are obtained expressions that describe absorption allowing for saturation. The relaxation times, usually introduced in such formulas, are expressed in terms of probabilities for molecular transitions. The deduced equations are used to investigate the dependence of the contour and width of natural emission and scattering lines on the flux density of the incident radiation. It is shown that these lines come closer as regards spectral properties with increasing power of the incident radiation. Orig. art. has: over 74 equations.

ASSOCIATION: none

SUBMITTED: 12Jul62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH NR REF SOV: 008 OTHER: 004

ja/nh

Card 2/2

APANASEVICH, P.A.

AID Nr. 997-3 25 June

COHERENT SPONTANEOUS EMISSION (USSR)

Kruglik, G. S., and P. A. Apanasevich. IN: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 4, Apr 1963, 483-487.
S/048/63/027/004/005/026

An analysis is given of coherent spontaneous emission taking place in dense systems where many particles exist in the space of a single emission wavelength. The particles cannot be considered independent of each other in the spontaneous emission process. A system of n identical molecules is postulated, with each molecule possessing only two nondegenerated internal states the energy and wave functions of which are known. The Hamiltonian operator of the system is expressed as the sum of Hamiltonians of separate molecules, and wave functions are expressed in the form of derivatives of wave functions describing the states of individual molecules. Linear combinations of wave functions are formed such that the square of the modulus remains unchanged with permutation of coordinates of molecules. Optical transition probabilities are derived which take into account quenching effects that

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AID Nr. 997-3 25 June

COHERENT SPONTANEOUS EMISSION [Cont'd] S/048/63/027/004/005/026

lead to finite line widths described in the second approximation by perturbation theory. These probabilities differ from the ones calculated without line width taken into account, in that they include matrix elements of transitions of individual molecules averaged over the total system with a phase multiplier. It is shown that intensity of spontaneous emission in the system is in general not proportional to the population of the initial level. In high-power radiation currents the intensity of spontaneous emission is proportional to the square of the number of particles in the system. [BB]

Card 2/2

APANASEVICH, P.A.

Absorption, emission, and scattering as dependent on the power of the incident radiation. Izv.AN SSSR.Ser.fiz. 27 no.4:492-496 Ap '63. (MIRA 16:4)
(Masers) (Radiation)

APANASEVICH, P.A.

Dependence of the contour and width of spectral lines on the intensity and frequency of the exciting radiation. Opt. i spektr. 16 no. 4:708-709 Ap '64. (MIRA 17:5)

ACCESSION NR: AP4032878 S/0051/64/016/004/0709/0711

AUTHOR: Apanasevich, P.A.

TITLE: Dependence of the spectrum line shape and width on the intensity and frequency of the exciting radiation

SOURCE: Optika i spektroskopiya, v.16, no.4, 1964, 709-711

TOPIC TAGS: secondary emission, two level system, density matrix, molecular spectrum, stimulated emission, line broadening, line shift, line splitting, nonradiative transition, internal pumping, energy transfer

ABSTRACT: In an earlier paper (Opt.i spektr.14,612,1963) the author presented a discussion of the spectral composition of the secondary emission from a system with two levels, excited by monochromatic radiation with a frequency close to the natural frequency of the system (the frequency associated with the transitions between the two levels). In that paper it was shown, on the basis of solution of the quantum electrodynamic equation for the density matrix, that spontaneous transitions lead to scattering and intrinsic emission with intensities proportional to the product of the integral spontaneous transition probability (the corresponding Einstein

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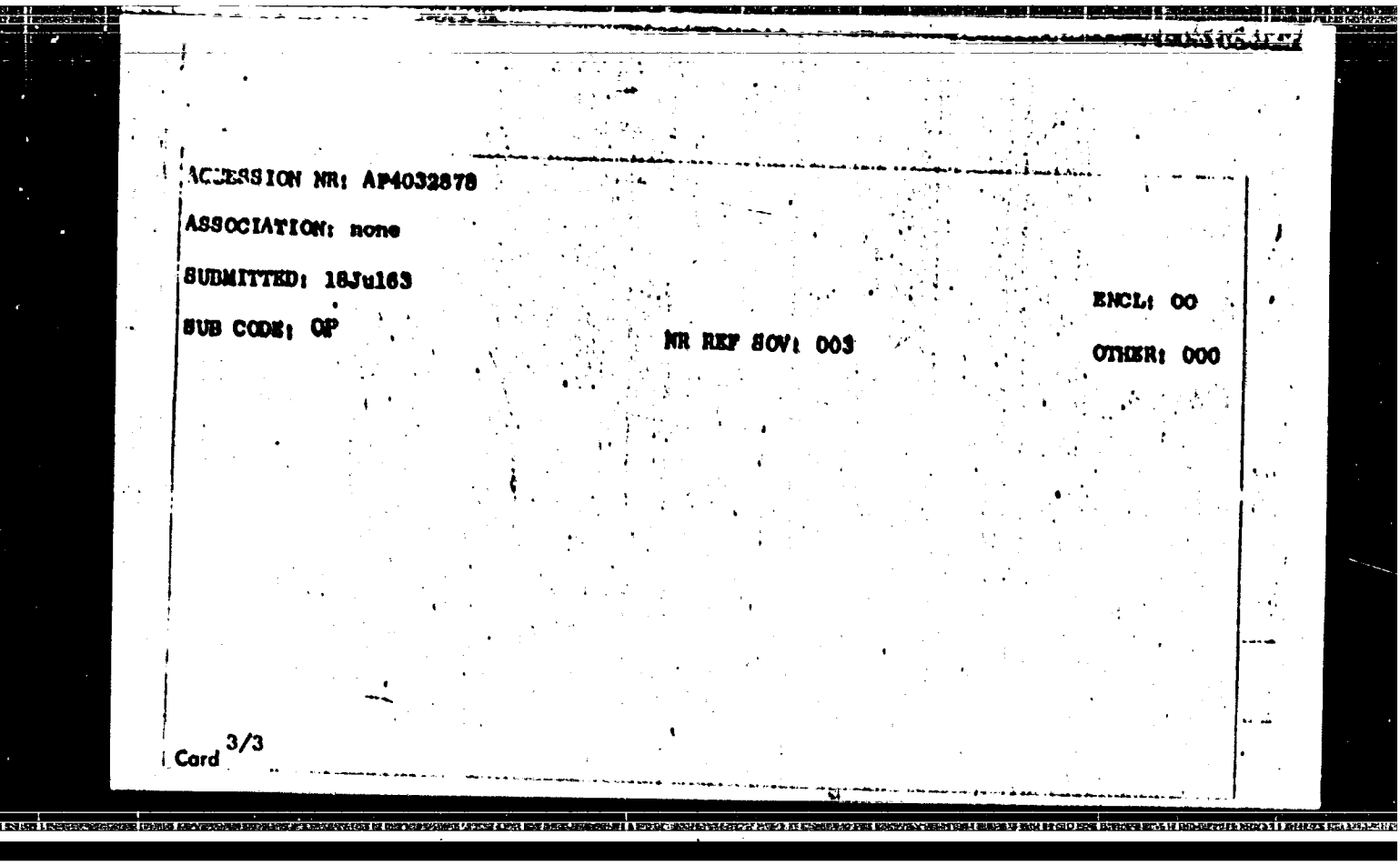
ACCESSION NR: AP 4032878

coefficient), the energy, the normalized line contour, and the number of particles on the levels active as regards the scattering and intrinsic emission, respectively. The topic was developed further by the author in a subsequent paper (Izv.AN SSSR, Ser.fiz.27,492,1963). In the present brief contribution there are described in rather general terms the results obtained through numerical calculations based on the earlier deduced equations; these largely substantiate the earlier inferences. Figures reproduced in the text show the calculated contours of the scattering line and the intrinsic emission line for different values of the power (intensity) and frequency of the incident radiation. Increase in the strength of the incident radiation results in broadening and lowering of the height of the scattering line; the variation in the case of the intrinsic emission line is somewhat more complex. Under certain conditions there is a tendency for a valley to form at the location of the original line peak, i.e., the peak splits. For high values of the matrix element of the interaction energy between the incident radiation and the absorbing molecule, the magnitude of the splitting is determined by the difference between the frequency of the incident radiation and the natural frequency of the system. Orig.art.has: 4 formulas and 2 figures.

Card 2/3



ACCESSION NR: AP4032878

ASSOCIATION: none

SUBMITTED: 18Jul63

ENCL: 00

SUB CODE: OP

NR REF SOV: 003

OTHER: 000

Card 3/3

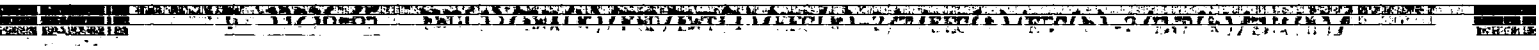
APANASEVICH, P.A.; BORISEVICH, N.A. VOLOD'KO, L.V.; GLADCHENKO, L.F.; GRIBKOVSKIY, V.P.; GURINOVICH, G.P.; IVANOV, A.P.; KUZNETSOVA, V.V.; PIKULIK, L.G.; PILIPOVICH, V.A.; RUBANOV, A.S.; RUBANOV, V.S.; SAMSON, A.M.; SARZHEVSKIY, A.M.; SOLOV'YEV, K.N.; UMREYKO, D.S.; KHAPALYUK, A.P.; YEL'YASHEVICH, M.A., akademik, red.

[Interaction between nonequilibrium radiation and matter] Vzaimodeistvie neravnovesnogo izlucheniia s veshchestvom. Minsk, Nauka i tekhnika, 1965. 223 p. (MIRA 18:3)

1. Akademiya nauk SSSR. Institut fiziki. Akademiya nauk Belorusskoy SSR (for Yel'yashevich).

APANASEVICH, P.A.

Some characteristics of the interaction of high-power radiation fluxes with matter. Vestsi AN BSSR. Ser.fiz.-mat. nav. no.1:54-62 '65. (MIRA 19:1)



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APANASEVICH, P.A.

Symposium on Nonlinear Optics. Zhur. prikl. spekt. 3 no. 2: 196-197 Ag '65. (MIRA 18:12)

L 20628-66 EWT(1)

ACC NR: AP6006963 SOURCE CODE: UR/0368/66/004/002/0134/0141

AUTHOR: Apanasevich, P. A.; Ordabayev, D. N.

ORG: none

TITLE: Resonance Raman scattering

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 2, 1966, 134-141

TOPIC TAGS: Raman effect, Raman scattering, laser, stimulated scattering, nonlinear optics

ABSTRACT: A quantum-mechanical theory of stimulated resonance Raman scattering by a three-level system which takes into account the effect of the incident and the scattered radiation on the state and the properties of the molecules is developed. The analysis, based on the use of a density matrix in the dipole approximation, is performed for the case when

$$\omega_1 - \omega_2 = \omega_{21} \qquad (1)$$

where ω_1 and ω_2 are the angular frequencies of the two incident waves comprising the electromagnetic field, and ω_{21} is one of the natural frequencies of the molecule and applies to all values of field intensities. A general solution of the problem could not be obtained. However, for the stationary case the system of linear differential

Card 1/2 UDC: 535.375.5

ACC NR: AP6006963

equations with constant coefficients was reduced to a system of algebraic equations which is identical to those obtained by the probability method. The solutions obtained show that for the radiation the frequencies of which (ω_1 and ω_2) obey (1) the incident radiation causes not only the saturation effect, but also broadening and shifting of the Raman lines and a change in the probability of stimulated emission and absorption. The formulas derived for the amplification of the scattered beam are applied to two special cases. Conditions for amplification of scattered Raman radiation are established and the limits of application of the theory, which does not take into account the effect of radiation on the properties of the molecules, are considered. Orig. art. has: 31 formulas. [GS]

SUB CODE: 20/ SUBM DATE: 06May65/ ORIG REF: 006/ OTH REF: 003/ ATD PRESS: 4222

Card 2/2 ULR

P/033/62/014/003/007/011
D237/D308

AUTHOR: Apanasewicz, S. (Gdańsk)

TITLE: Mathematical analysis of plane flows in magneto-hydrodynamics (in the absence of external electric field)

PERIODICAL: Archiwum Mechaniki Stosowanej, v. 14, no. 3-4, 1962, 665-673

TEXT: The author obtains two possible classes of motion for the ideal gas. If the normal component of flow $H_3 \neq 0$, the flow is irrotational, its potential being $\varphi = (\frac{1}{4}\rho_0)$ ln H and other components of magnetic field are zero (otherwise a trivial solution occurs). A simple wave solution does not exist and Bernoulli's equation is valid. If $H_3 = 0$ the velocity field is not necessarily potential (potential flows are mostly trivial), Bernoulli's equation is seldom valid, and there are simple wave solutions.

Card 1/1

APANASEWICZ, S. (Gdansk)

On certain classes of nonstationary azially symmetric flows in magneto-gas dynamics. Archiw mech 16 no.2:507-516 '64.

USSR/Medicine - Diphtheria FD-2308

Card 1/1 Pub 148 - 9/36

Author : Apanashchenko, N. I.; Nekhotenova, Ye. I.

Title : Production of the diphtheria toxin under conditions involving agitation by shaking

Periodical : Zhur. mikro. epid. i immun. No 2, 27-29, Feb 1955

Abstract : Found that when diphtheria bacilli PWg are grown in such a manner that increased aeration is provided by shaking, as much toxin is obtained in 36 hours as is regularly formed under production conditions within 10-12 days. Four graphs.

Institution : Division of the Prophylaxis of Children's Diseases, Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy Medical Sciences USSR

Submitted : March 16, 1954

APANASHCHENKO, N.I.; NEKHOTENOVA, Ye.I.

Experimental study of the sensitizing properties of unrefined and purified diphtheria anatoxins. Zhur.mikrobiol.epid. i immun. no.7:10-15 Jl '55. (MLRA 8:9)

1. Iz Instituta epidemiologii i mikrobiologii imeni N.F. Gamalei AMN SSSR dir. prof. G. V. Vygodchikov)

(DIPHTHERIA,
anatoxin, sensitizing properties of crude & purified anatoxins in animals)
(ALLERGY, experimental,
diphtheria anatoxin sensitization, comparison of crude & purified anatoxins in animals)

APANASHCHENKO, N.I.

Material on the investigation of reactions of children to the administration of purified adsorbed diphtherial anatoxin. Zhur. mikrobiol.epid. i immun.29 no.3:44-47 Mr '58. (MIRA 11:4)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.
(DIPHTHERIA, immunology,
eff. of adsorbed puridied anatoxin in child (Rus)

BAKANOVA, N.P., APANASENKO, E.T.

Skin test in determination of susceptibility of children to diphtheria. Zhur.mikrobiol. epid. i immun. 29 no.6:38-43 Je '58 (MIRA 11:7)

1. Iz kafedry detskikh infektsionnykh bolezney II Meditsinskogo instituta imeni Pirogova i Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.
(DIPHTHERIA, immunology,
skin test in determ. of susceptibility (Rus))

17(8);(12) SOV/16-59-9-4/47

AUTHORS: Bakanova, N.P., and Apanashchenko, N.I.

TITLE: Determining the Susceptibility of Children to Diphtheria by the Skin Method. II. Using Purified Stabilized Toxin for the Skin Test

PERIODICAL: Zhurnal mikrobiologii, epidemiologii i immunobiologii, 1959, Nr 9, pp 19-22 (USSR)

ABSTRACT: In Part I of this work the authors published the findings of their investigations into the susceptibility of children to diphtheria, determined by the skin method and performing the Schick test at the same time. Here, in Part II, the authors describe the effect of using purified diphtheria toxin with a glycerine-gelatine stabilizer, prepared according to the method evolved by P.V. Pavlov and A.G. Leonova at the Institut imeni Gamalei (Institute imeni Gamaleya). Some 357 children aged from 6 months to 13 years were vaccinated and kept under observation. Both the skin test and the Schick test were used. It was found that the coincidence in the results of the two tests increased directly with an increase in the concentration of the diphtheria toxin. At a concentration of 100 Dlm/ml the coincidence reached 98.8%. This was much better than when unpurified toxin was used. The method

Card 1/2

Determining the Susceptibility of Children to Diphtheria by the Skin Method. II. Using Purified Stabilized Toxin for the Skin Test

was found to be quite harmless for children. The purified stabilized diphtheria toxin retained its specific action on animals for 2 years. The authors recommend further work on the efficacy and practical advisability of this method.
There are 2 tables, 1 graph and 3 Soviet references.

ASSOCIATION: Kafedra detskikh infektsionnykh bolezney II Moskovskogo meditsinskogo instituta imeni Pirogova (Chair of Children's Infectious Diseases of the II Moscow Institute imeni Pirogov); Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR (Institute of Epidemiology and Microbiology imeni Gamaleya of the AMN USSR)

SUBMITTED: February 25, 1959

PAVLOV, P.V.; AKIMOVA, V.V.; APANASHCHENKO, N.I.; ATSEROVA, I.S.

Experimental studies on antigenic and immunogenic properties of combined vaccines against scarlet fever, diphtheria, and whooping cough. Zhur.mikrobiol.epid. i immun. 30 no.5:42-48 My '59. (MIRA 12:9)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

(VACCINES AND VACCINATION,
scarlet fever-diphtheria-whooping cough vaccine, animal tests (Rus))
(SCARLET FEVER, immunol.
same)
(WHOOPING COUGH immunol.
same)
(DIPHTHERIA, immunol.
same)

APANASHCHENKO, N.I.

Studies on the immunizing properties of the diphtherial component of combined preparations. Zhur.mikrobiol.epid.i immun. 30 no.10:137-141 O '59. (MIRA 13:2)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.
(VACCINES)
(DIPHTHERIA immunol.)

SOKOLOVA, N.N.; APANASHCHENKO, N.I.; ZHDANOV, V.M.

Experimental study of influenza-diptheria-whooping cough vaccine. Report No. 1: Immunological reaction to the influenza antigen. Vop. virus. 5 no. 1:33-37 Ja-F '60. (MIRA 14:4)

1. Institut virusologii imeni D.I. Ivanovskogo AMN SSSR i Institut epidemiologii i mikrobiologii imeni N.F. imeni N.F. Gamalei AMN SSSR, Moskva.

(INFLUENZA) (VACCINES)

APANASHCHENKO, N.I.; SOKOLOVA, N.N.; ZHDANOV, V.M.

Experimental study of influenza-diphtheria-whooping cough vaccine. Report No. 2: Immunological reaction to the diphtheria and whooping cough antigens. Vop. virus. 5 no. 1:57-61 Ja-F '60. (MIRA 14:4)

1. Institut virusologii imeni D.I. Ivanovskogo AMN SSSR i Institut epidemiologii i mikrobiologii imeni N.F. Gamalei AMN SSSR, Moskva.
(DIPHTHERIA) (WHOOPING COUGH) (VACCINES)

APANASHCHENKO, N.I.; NEKHOTENOVA, Ye.I.; LEONOVA, A.G.

Methods for the determination of diphtheria antitoxin in immune serums. Zhur. mikrobiol. epid. i immun. 31 no. 4:44-47 Ap '60. (MIRA 13:10)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.
(DIPHTHERIA) (TOXINS AND ANTITOXINS)

APANASHCHENKO, N.I., ZHDANOV, V.M., SOKOLOVA, N.K.

"Experimental studies of combined influenza-diptheria-pertussis vaccine."

Report submitted for the 1st Intl. Congress on Respiratory Diseases of Virus and Rickettsial Orgin. Prague, Czech. 23-27 May 1961.

DZHAVROVA, I.K.; APANASHCHENKO, N.I.; KASHINTSEVA, N.S.

Study of the immunogenic properties of sorbed diphtheria-tetanus anatoxin. Zhur. mikrobiol., epid. i immun. 40 no.9: 57-61 S'63. (MIRA 17:5)

1. Iz Smolenskogo meditsinskogo instituta i Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

POLIKAR, A.Ch.; AFANASHCHENKO, N.I.

Immunochemical study of purified diphtheria antitoxin.
Zhur. mikrobiol., epid. i immun. 41 no.11:40-43 '65.
(MIRA 18:5)

1. Sofiyskiy nauchno-issledovatel'skiy institut epidemiologii i mikrobiologii i Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.

PAVLOV, P.V.; NEKHOTENOVA, Ye.I.; LEONOVA, A.G.; AFANASHCHENKO, N.I.; POMYANKEVICH, A.N.

Production of diphtheria toxin under conditions of submerged cultures. Nauch. osn. proizv. bakt. prep. 10:71-76 '61. (MIRA 18:7)

1. Institut epidemiologii i mikrobiologii im. Gamalei AMN SSSR.

APANASHCHENKO, N.I.; KOSTYUKOVA, N.N.; BLYUMENTAL', K.B.; YEZHOVA, G.G.

Toxigenic properties of freshly isolated diphtheria cultures. Zhur.mikrobiol., epid. i immun. 42 no.9:36-42 S '65. (MIRA 18:12)

1. Institut epidemiologii i mikrobiologii imeni Gamalei AMN SSSR. Submitted April 20, 1964.

L 10977-66 EWT(1)/EWA(1)/EWA(b)-2 JK

ACC NR: AP5028392 SOURCE CODE: UR/0016/65/000/009/0036/0042

AUTHOR: Apanashchenko, N.I.; Kostyukova, N.N.; Blyumental', K.V.; Yezhova, G.G.

ORG: Institute of Epidemiology and Microbiology im. Gamaleya, AMN SSSR (Institut epidemiologii i mikrobiologii)

TITLE: Toxigenic properties of freshly isolated diphtheria cultures

SOURCE: Zhurnal mikrobiologii, epidemiologii i immunobiologii, no. 9, 1965, 36-42

TOPIC TAGS: toxicology, microbiology

ABSTRACT: The main purpose of this investigation was to study the toxigenic properties and dynamics of toxin formation in freshly isolated diphtheria cultures by various methods and to make a comparative evaluation of these methods. The authors used 164 strains of diphtheria cultures isolated in and around Moscow in 1962-1963. The toxigenicity of the cultures was determined by agar precipitation, intracutaneous injection in guinea pigs, and by testing the potency of the toxin in filtrates of broth cultures. The authors establish that the most accurate method of determining the toxigenic properties of diphtheria cultures in vitro is the agar precipitation method since it is highly specific. However, even it did not always permit eliciting toxigenic cultures that slowly produced small amounts of toxin. The flocculation test is less accurate and rather frequently when using this method it was impossible to detect the presence of toxin in the filtrate of broth cultures and to determine its strength. The toxigenic properties of the diphtheria cultures in vivo can be established more

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accurately by determining the MLD of the filtrates of broth cultures. The intracutaneous method does not always reveal cultures that produced toxins of low strength and less accurately reflects fluctuations in the toxigenicity of individual strains. As a rule, highly toxigenic cultures were elicited from diphtheria patients and those that were isolated from carriers varied considerably in degree of toxigenicity, from cultures that did not form toxin to highly toxigenic ones. The dynamics of toxin formation differed in the investigated cultures: the maximum was reached in 24 and 48 hours and on the 5th day. Orig. art. has: 1 figure and 5 tables.

SUB CODE: 06 / SUBM DATE: 20Apr64 / ORIG REF: 015 / OTH REF: 007

Card 2/2

NAZAROV, P.P.; KUTUZOV, B.N.; APANASHCHENKO, V.G.

Operation of double-stage compressors in a single-stage system on roller-bit rigs. Gor. zhur. no.4:74 Ap '61. (MIRA 14:4)

1. Moskovskiy gornyy institut (for Nazarov, Kutuzov), 2. TSentral'noye rudoupravleniye tresta Soyuzasbest.
(Boring machinery) (Air-compressors)

TAVANETS, S.M., inzh.; SHUYER, L.A., inzh.; NEMENNIK, L.M., inzh.; APANASHCHENKO, V.G., inzh.; BRUSNITSYN, M.I., inzh.

Results of relaying railroad tracks in strip mines. Bezop. truda v prom. 8 no.10:30-31 O '64. (MIRA 17:11)

AFANASOV, V.A.; [illegible]

Spring-type strain gages for measuring [illegible]. Izm.tekh. no.9:59 S '65. (MIRA 18:10)

[redacted], M. P.

Apanasyuk, M. P. -- "Bile Lipids in the Dog under Normal Conditions and in Certain Pathological States." Acad Med Sci USSR. Moscow, 1955. (Dissertation for the Degree of Candidate in Biological Science)

SO: Knizhnaya Letopis', No 12, 1956

APANASYUK, M.P.

Effect of various quantities of food in the body on the secretion of lipids with bile. Vop.med.khim. 2 no.2:122-127 Mr-Ap '56. (MLRA 9:9)

1. Laboratoriya fiziologii i patologii obmena veshchestv Instituta normal'noy i patologicheskoy fiziologii AMN SSSR, Moskva

(BILE,
lipids, eff. of food in dogs (Rus))
(LIPIDS,
in bile, eff. of food in dogs (Rus))
(FOOD, effects,
on bile lipids (Rus))

APANASYUK, M.P.

Phosphorus metabolism and enzymatic activity in the submaxillary glands of cats during secretory function. Vop.med.khim. 5 no.5: 328-332 S-O '59. (MIRA 13:2)

1. Biochemical Laboratory, Institute for Normal and Pathological Physiology, the U.S.S.R. Academy of Medical Sciences, Moscow.
(SUBMAXILLARY GLAND metab.)
(PHOSPHORUS metab.)
(PHOSPHATASES metab.)

APAHASYUK, M.P.

Effect of prolonged administration of atophane on the excretion of lipids and nitrogenous substances with bile. Ukr.biokhim. zhur. 31 no.1:108-117 '59. (MIRA 12:6)

1. Biochemical Laboratory of the Institute of Normal and Patological Physiology of the academy of Medical Sciences of the U.S.S.R, Moscow.
(CINCHOPHEN) (BILE)

RUBEL', V.M., APANASYUK, M.P. [deceased], MEYERSON, F.Z.

Metabolism of myocardial substances in compensatory hyperfunction of the heart. Myocardial carbonic anhydrase activity in compensatory hyperfunction and hypertrophy of the heart. Vop. med. khim. 9 no.1:57-60 Ja-F '63.
(MIRA 17:6)

1. Laboratoriya fiziologii i patofiziologii serdechnoy deyatel'nosti i laboratoriya biokhimii, Institut normal'noy i patologicheskoy fiziologii AMN SSSR, Moskva.

APANAYEV, O. SH.

Manufacture of dry willow extract. O. Sh. Apanaev and P. K. Zubin. *Kozhevenno-Obuvnaya Prom.* 14, 40-1(1935).—Willow bark was extd. in battery diffusers at a temp. of the head diffuser of 70° and the tail diffuser of 85°, a pressure of 0.8 atm. and a liquid discharge factor of 850. The dry ext. had H_2O 18, water-sol. substances 78.8, insol. matter 3.4, nontans 35.7 and tans 42.8%. Various extn. experiments are described. A. A. B.

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

38110. APANAYEV, O. SH.

Povysheniye Dobrokachestvennosti yelovogo ekstrakta. Legkaya prom-st', 1949, no. 11, s. 21

APANAYEV Ö. Sh.

A

Combination use of sodium sulfite and bisulfite in extracting spruce bark. O. Sh. Apanaev. *Legkaya Prom.* 10, No. 10, 24-5(1950).—Ext. obtained with the addn. of 0.5% sulfite to the second diffuser from the tail end and 0.25% bisulfite to second diffuser from the head end had higher tannin value and less used material than ext. obtained by the usual method. Rate of soln. of solid ext. was also increased somewhat. Consumption of tons of bark per ton of tannin matter was reduced from 12 to 11.1.

B. Z. Kamich

APANIN, I., aspirant

Method for improving the performance reliability and accuracy of the synphasing system of the "Don" and "Donets" radar stations. Mor. flot 25 no.4:17-18 Ap '65. (MIRA 18:6)

1. TSentral'nyy nauchno-issledovatel'skiy institut morskogo flota.

ACC NR: AT6034957 (N) SOURCE CODE: UR/2752/66/000/073/0077/0083

AUTHOR: Apanin, I. V.

ORG: None

TITLE: Algorithm for a shipborne digital computer used in automatic tracking of multiple targets

SOURCE: Leningrad. Tsentral'nyy nauchno-issledovatel'skiy institut morskogo flota. Trudy, no. 73, 1966. Sudovozhdeniye i svyaz' (Navigation and communication), 77-83

TOPIC TAGS: target tracking, tracking computer, digital computer, automatic computer programming, algorithm, ship navigation

ABSTRACT: One method of automatic tracking of multiple targets at sea with the aid of a digital computer is reviewed and a possible algorithm for such tracking is described. The automatic tracking process is one of continuous refinement of target speed and true course for unchanging initial φ, λ, and t. Orig. art. has: 4 figures and 2 formulas.

SUB CODE: 17/SUBM DATE: None/ORIG REF: 004

Card 1/1 UDC: 656.6:681.142.5:002.5

L 33447-66 EWT(1)/FSS-2 WR

ACC NR: AR6012306 SOURCE CODE: UR/0274/65/000/010/B028/B028

AUTHOR: Apanin, I. V.

TITLE: Using magnetostriction delay lines for isolating desirable signals

SOURCE: Ref. sh. Radiotekhnika i elektrosvyaz', Abs. 10B190

REF SOURCE: Tr. Tsentr. n.-i. in-ta morsk. flota, vyp. 59. 1964, 60-70

TOPIC TAGS: radar, delay line, magnetostriction delay line, signal noise separation

ABSTRACT: A method is considered for isolating radar signals by periodic filters containing magnetostriction delay lines. A pulse characteristic of the periodic filter is presented. A preselector block diagram, its functional diagram, and preselector control unit are shown. A time diagram and a logical table of the signal separator are given. Operation of all circuits is described in detail. The above system of radar-data preprocessing assumes that the signal comes from an optimal receiver with a signal-to-noise ratio $\gg 0.41$. As a result of preprocessing, random signals are excluded, and the signal-to-noise ratio is enhanced up to 20/1, i. e., up to the technical parameters of the delay lines. The above system is suitable for use jointly with a time-code converter in order to obtain numerical code of the targets. By using the time code converter with a controllable selecting pulse, digital codes of 16 targets situated in one elementary sector can be obtained;

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ACC NR: AR6012306

after the logical processing of 16 cycles (after the 64th step), the device yields the same information 16 or more times, i. e., up to the time when a new starting pulse from the antenna-slewing-angle converter arrives. Four figures. Bibliography of 6 titles. B. A. [Translation of abstract]

SUB CODE: 17

Card 2/2

AMIANTOVA, M.A.; APANOVA, A.M.; ARTEM'YEVA, Z.S.

Concentration of streptomycin in the blood in tuberculosis therapy [with summary in French]. Probl.tub. 35 no.8:101-105 '57. (MIRA 11:4)

1. Iz Moskovskogo gorodskogo nauchno-issledovatel'skogo tuberkuleznogo instituta (nauchnyy rukovoditel' - prof. V.L.Rynis)

(TUBERCULOSIS, ther.
streptomycin, determ. of blood concentration (Rus))

OLENEVA, T.N.; APAHOVA, A.M.

Lung cancer in patients hospitalized for tuberculosis. Probl. tub. 36 no.8:36-42 '58. (MIRA 12:7)

1. Iz Moskovskoy tsentral'noy klinicheskoy protivotuberkuleznoy bol'nitsy (glavnyy vrach - zasluzhennyy deyatel' nauki prof. V. L. Kynis).
(LUNGS--CANCER) (TUBERCULOSIS)